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# Client and counselor attitudes toward the use of medications for treatment of opioid dependence

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Received 20 April 2006; received in revised form 30 August 2006; accepted 11 September 2006

## Abstract

Attitudes, perceived social norms, and intentions were assessed for 376 counselors and 1,083 clients from outpatient, methadone, and residential drug treatment programs regarding four medications used to treat opiate dependence: methadone, buprenorphine, clonidine, and ibogaine. Attitudes, social norms, and intentions to use varied by treatment modality. Methadone clients and counselors had more positive attitudes toward the use of methadone, whereas their counterparts in residential and outpatient settings had neutral or negative assessments. Across modalities, attitudes, perceived social norms, and intentions toward the use of buprenorphine were relatively neutral. Assessments of clonidine and ibogaine were negative for clients and counselors in all settings. Social normative influences were dominant across settings and medications in determining counselor and client intentions to use medications, suggesting that perceptions about beliefs of peers may play a critical role in use of medications to treat opiate dependence. © 2007 Elsevier Inc. All rights reserved.

**Keywords:** Opioid dependence; Social norms; Attitudes

## 1. Introduction

Investments in the development of pharmacotherapies for the treatment of alcohol and drug dependence have begun to yield medications that enhance treatment effectiveness (Garbutt, West, Carey, Lohr, & Crews, 1999; Litten & Allen, 1999; O'Brien, 1997; Steenrod et al., 2001; Swift, 1999; Swift et al., 1998). Underutilization of these innovative pharmacotherapies, however, is a concern and points to the need for advancements in adoption and implementation strategies (Institute of Medicine, 1998). Speculation about resistance to the use of medications suggests that some patients and therapists believe that the use of medication to treat addiction is inconsistent with the experience of recovery (Institute of Medicine, 1995, 1997). Unfortunately,

there is little empirical data on the attitudes and beliefs of clients and counselors toward using medication as part of a therapeutic plan for the treatment of drug dependence.

### 1.1. Attitudes toward the use of medications for opiate dependence

Investigations conducted in the early 1970s found ambivalent attitudes and beliefs about the use of methadone in treating opiate dependence (Brown, 1975). More contemporary investigations used a measure of “abstinence orientation” (beliefs that methadone use should be time limited) and assessed the opinions of staff in methadone programs in Australia (Caplehorn, Irwig, & Saunders, 1996a, 1996b) and New York City (Caplehorn, Hartel, & Irwig, 1997; Kang, Magura, Nwakeze, & Demsky, 1997). These studies found variations among programs in support for abstinence-oriented treatment and that an abstinent orientation had a negative effect on retention in care. Moreover, counselors with less education and

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specialization were more likely to support abstinence-only treatment models.

Treatment program staff ( $n = 317$ ) participating in the Delaware Valley Node of the National Drug Abuse Treatment Clinical Trials Network supported increased use of research findings and new approaches in drug abuse treatment including the use of medications; support varied depending on the intervention as well as counselor education and experience (Forman, Bovasso, & Woody, 2001). Counselors with more education and experience had more positive attitudes toward the use of medications. Additional research on the effects of staff attitudes on client perceptions and behaviors seems advisable, especially in treatment settings where medications have not been used extensively.

In summary, prior research encourages a more systematic examination of practitioner and patient attitudes and beliefs. Clients and staff recognize both positive and negative aspects of the use of medications. Interventions to reduce negative opinions and increase positive assessments could lead to behavior change and greater use of medications. Overall, the investigations have been primarily atheoretical and have provided little direction for efforts to promote the use of medications. Additional guidance on the development of effective educational and persuasion initiatives can be found in the social psychology and marketing literature.

### 1.2. The theory of reasoned action

The theory of reasoned action and its modification, the theory of planned behavior (Ajzen, 1985; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), have been applied to the analysis of health behaviors and the development of health promotion campaigns for more than two decades (Godin & Kok, 1996). The theories may provide a foundation for investigations that are focused on the use of medication in treatment for drug abuse. According to the model, the most direct cognitive determinant of a behavior (in this case, the use of a medication in drug abuse treatment) is the intention to perform that behavior. Intention is a joint function of the attitude toward the behavior and the perceived social expectations (norms) to perform the behavior. The relative influence of attitudes and social norms varies with changes in the behavior, the situation, and the individual. Model components are both proximal to the behavior and specific to the intention. Strong correlations between attitude and behavior are expected only when there is a high degree of correspondence. Measures should specify the behavior, object of the behavior, time, and behavioral context. To predict a patient's intention to use clonidine for heroin detoxification, for example, an investigation should assess the attitude toward taking clonidine (behavior) for heroin detoxification (context).

The theory of reasoned action and the theory of planned behavior have found widespread application to health-related behaviors including HIV risk reduction, use

of contraceptives (Albarracin, Fishbein, & Middlestadt, 1998; Fishbein & Guinan, 1996; McCarty, 1981), and the use of alcohol, tobacco, and other drugs (Bearden & Woodside, 1978; McCarty, Morrison, & Mills, 1983; Schlegel, Crawford, & Sanborn, 1977; Schlegel, D'Avernas, Zanna, DeCourville, & Manske, 1992). Reviews of applications of the model to health behaviors report that the model can explain 40% to 50% of the variation in intention (Godin & Kok, 1996; Sutton, 1998). The model has a strong base in theoretical and applied research and can guide the construction of initiatives that encourage patients and practitioners to use medications.

## 2. Materials and methods

The current investigation examines attitudes, beliefs, perceived social norms, and intentions to use four medications (buprenorphine, clonidine, ibogaine, and methadone) to treat opioid dependence. Clients and counselors were recruited from outpatient, methadone maintenance, and residential treatment programs in Massachusetts and Oregon. Clients and counselors completed different versions of the Medications Opinions Survey to assess attitudes, beliefs, social norms, and intentions to use medications in the treatment of addiction.

### 2.1. Medication opinions survey

#### 2.1.1. Survey development

Five treatment programs participated in focus groups to assess client and counselor beliefs, knowledge of, and attitudes about the use of medications to assist individuals in recovery from opiate dependence. Separate groups were conducted with counselors ( $n = 43$ ; 74% women; 86% White; 16.5 years of education) and clients ( $n = 43$ ; 60% women, 84% White; 12.0 years of education). A qualitative analysis suggested that treatment modality (residential, outpatient, and methadone), program philosophies, stage of treatment, and experience with medication affected willingness to use medications. Content for statements on beliefs about medications were drawn from the focus groups and incorporated into a draft version of the Medications Opinions Survey. The instrument was piloted with 144 counselors and clients from methadone, outpatient, and residential treatment settings. The pilot study documented the feasibility of study procedures. Belief statements that correlated most strongly with attitude measures were selected for the final version of the instrument. Item format and structure were based on the formats used in prior studies of the Fishbein–Ajzen model (e.g., McCarty, 1981; McCarty et al., 1983).

#### 2.1.2. Attitudes

Positive and negative affect toward the use of specific medications was assessed using three semantic differential

items with seven-point scales: bad–good, sad–happy, and useless–useful; scales were scored  $-3$  to  $+3$ . The attitude score was based on the sum of these three items and ranged from  $-9$  to  $+9$ . The counselor attitude item read “For me, working with clients who take <insert medication> to treat heroin dependence is . . .” and the client item read “For me, taking <insert medication> to treat heroin dependence is . . .” Alpha coefficients for the three items measuring attitudes for each medication were all above .94.

### 2.1.3. Perceived social norms

Client and counselor perceptions of social norms were measured on a seven-point *unlikely* to *likely* scale (scored  $-3$  to  $+3$ ) that assessed the likelihood that individuals important to the respondent supported the use of medications. The counselor item read, “People who are important to me think I should work with clients who take <insert medication>.” The parallel item for clients read, “People who are important to me think I should take <insert medication> for heroin dependence.” Negative scores suggested less perceived social support for the use of the medication in the treatment of opiate dependence. This item correlated highly with other items measuring similar facets of social norms (i.e., other counselors, friends, and family). The single item measure of social norms has been used widely in tests of the Fishbein–Ajzen model.

### 2.1.4. Intentions

Intention items were based on a seven-point scale scored *unlikely* to *likely* ( $-3$  to  $+3$ ), with negative scores indicating lower intentions to use opiate treatment medications. For counselors, the item assessed the extent to which the counselor was likely to use this medication in treating his or her patients—“I intend to tell my clients who are dependent on heroin to take <insert medication>.” The item for clients read, “I intend to take <insert medication> for heroin dependence.”

## 2.2. Participants

Data were collected in 2002 and 2003 (prior to and shortly after the Food and Drug Administration’s approval of buprenorphine for the treatment of opiate dependence). The counselor sample included 376 counselors (125 from methadone programs, 127 from residential, and 124 from outpatient programs) from Oregon ( $n = 53$ ) and Massachusetts ( $n = 323$ ; one response with missing data on program type was excluded from the analysis). Two thirds (66%) of the counselors were women and about one in five (22%) were persons of color (8% African American, 7% multiracial, 5% Hispanic, and 2% other). Four of 10 counselors (42%) had a bachelor’s degree or higher; 34% had an associate’s degree or certificate, and the remaining 24% had a high school diploma or less. More than one third (36%) of the counselors in the study self-identified as being in recovery.

Clients ( $n = 1,083$ ) were recruited from methadone programs ( $n = 367$ ), residential programs ( $n = 361$ ), and outpatient programs ( $n = 355$ ) located in Oregon ( $n = 177$ ) and Massachusetts ( $n = 906$ ). This study did not collect specific data on how clients were referred for treatment. Thus, participants in this study likely reflect the range of client populations including those who were self-referred, those who were court ordered into treatment, those from primary care referrals, and individuals referred from social service and mental health providers. Oregon and Massachusetts use the American Society of Addiction Medicine patient placement criteria to assign patients to level of care (i.e., outpatient, residential, and methadone treatment); study participants met admissions criteria for the level of care where they were recruited. African Americans (9.6%), Hispanics (5%), and multiracial clients (8%) were included in the study. Most clients had a high school education or less (82%); 16% had an associate’s degree, and 2% had a bachelor’s degree or higher. Women (55%) and opiate-dependent individuals (81%) were intentionally over-represented in the study sample. State admissions data (fiscal year 2002) suggest that more than two thirds of the patients in Massachusetts (67%) and Oregon (69%) were men; 16% of the Massachusetts clients reported a primary heroin problem (Oregon data not available). Nearly two thirds (63%) of the clients reported that heroin or other opiates were their primary drugs of choice. Opiate-dependent individuals reported prior experiences taking clonidine (77%), methadone (87%), buprenorphine (30%), and ibogaine (2%).

## 2.3. Procedures

### 2.3.1. Counselors

An investigator contacted the clinic director and invited the treatment program to participate in a project about attitudes and intentions to use pharmacological approaches in addictions treatment. The research team negotiated with the executive or clinical director to schedule 30-minute small group sessions with counselors. Following a standardized introduction, counselors were provided an information sheet and completed the Medication Opinions Survey. Counselors were debriefed after completing the survey, and participants received a US\$25 gift card to a local department/grocery store.

### 2.3.2. Clients

To minimize intrusion on the clinical process, two or three counselors at each study site were trained to recruit clients. Counselors were paid US\$100 to participate in training and to collaborate with the study team. At the beginning of individual therapy sessions, the counselor invited patients to participate by providing a flyer with details about the project and survey administration times. Clients were encouraged to inform the counselor of their interest in participating and which session they preferred to attend. A log was maintained



by participating therapists to track which clients received a flyer and their response. Counselors were not directly involved in data collection.

Researchers met with clients in small groups to complete informed consent forms and surveys. Participants were provided with a US\$25 gift card to a local department/grocery store.

### 2.3.3. Human subject protections

Institutional Review Boards at Brandeis University and Oregon Health & Science University reviewed the study protocol and approved the use of information sheets to inform clients and counselors. Research staff complied with 42 CFR Part 2 (Confidentiality of Alcohol and Drug Abuse Patient Records; Legal Action Center, 1991) and signed nondisclosure agreements with each participating program. Data were collected simultaneously at 5 sites in Oregon and at 18 sites in Massachusetts. Client and counselor data were not linked in the analysis or presentation of findings. Individuals could decline to participate.

### 2.4. Data analysis

A multivariate analysis of variance (MANOVA) tested means of attitudes, social norms, and behavioral intentions by program modality (methadone, residential, and outpatient). Program type was the independent variable, and gender, education, and recovery status (for counselors only) were included as covariates. A variable defined as opiates as primary drug of abuse was a covariate in the analysis of client data. For each dependent variable (behavioral intentions, attitudes, and social norms), the univariate effects were examined to interpret multivariate effects. Differences between means were evaluated with Scheffé post hoc comparisons ( $\alpha$  level of  $p < .05$ ). Multiple regressions tested the theory of reasoned action to assess the influence of perceived social norms and attitudes on intentions to use selected medications to treat opiate dependence. Client and counselor data were analyzed by medication (methadone, buprenorphine, clonidine, and ibogaine) and level of care. Client and counselor data were not directly comparable because they responded to slightly different questions. Counselors were asked to assess use of medication with clients, and clients were asked to assess their use of medications to treat their personal dependence. It is instructive, nonetheless, to examine the patterns of responses in both samples.

## 3. Results

### 3.1. Demographics

Table 1 presents selected demographic variables by program type. Statistical tests reveal that the three modal-

Table 1  
Demographics, by program type

| Type of program                       | Outpatient (%) | Methadone (%) | Residential (%) | $\chi^2$ tests              |
|---------------------------------------|----------------|---------------|-----------------|-----------------------------|
| Counselors                            |                |               |                 |                             |
| Women                                 | 70.7           | 65.0          | 72.2            | $\chi^2(2) = 2.06$          |
| Minorities                            | 8.1            | 15.6          | 27.0            | $\chi^2(2) = 6.14^\dagger$  |
| Hispanic                              | 3.3            | 13.0          | 4.7             | $\chi^2(2) = 10.60^*$       |
| In recovery                           | 21.0           | 22.3          | 64.5            | $\chi^2(2) = 5.73^\dagger$  |
| % with master's degree                | 54.5           | 56.1          | 15.9            | $\chi^2(2) = 53.2^\dagger$  |
| Clients                               |                |               |                 |                             |
| Women                                 | 45.4           | 59.3          | 60.9            | $\chi^2(2) = 6.07^\dagger$  |
| Minorities                            | 12.9           | 15.7          | 24.4            | $\chi^2(2) = 7.63^\dagger$  |
| Hispanic                              | 5.6            | 9.6           | 5.6             | $\chi^2(2) = 5.93$          |
| Heroin or opiates as the primary drug | 36.83          | 94.8          | 57.8            | $\chi^2(2) = 268.2^\dagger$ |
| % with high school diploma            | 81.7           | 77.8          | 76.1            | $\chi^2(2) = 3.44$          |

\*  $p < .05$ .

†  $p < .005$ .

ities differ. For counselors, the largest difference was that residential programs were much more likely to employ counselors in recovery (65%) than were outpatient programs (21%) or methadone programs (22%). Outpatient and methadone programs were also more likely to have a more educated workforce, and residential programs were more likely to serve minority clients. More women and lesser educated clients and minorities attended residential programs. As expected, most methadone recipients were individuals whose primary drug of use is heroin or opiate.

### 3.2. Attitudes toward the use of medications

#### 3.2.1. Counselor attitudes

Mean counselor attitudes toward the use methadone, buprenorphine, clonidine, and ibogaine for the treatment of opioid dependence are reported in Table 2. Multivariate effects on attitudes were observed for program modality ( $\lambda = .73$ ;  $df = 8, 672$ ;  $F = 14.30$ ;  $p < .0001$ ) and counselors in recovery ( $\lambda = .97$ ;  $df = 4, 336$ ;  $F = 2.74$ ;  $p < .03$ ). Attitudes toward the use of methadone differed significantly across modality; counselors working in methadone treatment programs had more positive attitudes ( $M = 5.9$ ) compared with outpatient counselors ( $M = 2.8$ ) and counselors in residential settings ( $M = 1.5$ ). Attitudes toward the use of buprenorphine were slightly less positive. Counselors in outpatient ( $M = 3.7$ ) and methadone ( $M = 3.4$ ) treatment had more positive attitudes toward buprenorphine than their colleagues from residential ( $M = 1.4$ ) programs. Conversely, attitudes toward clonidine were more positive among outpatient ( $M = 2.4$ ) and residential ( $M = 1.6$ ) counselors than among counselors from methadone treatment ( $M = -0.4$ ). Attitudes toward ibogaine were negative and did not differ by treatment modality. Counselors in recovery had more negative attitudes toward ibogaine

Table 2

Attitudes of counselors and clients toward four medications, by program modality

| Variables                           | Medication         |                   |                   |           |
|-------------------------------------|--------------------|-------------------|-------------------|-----------|
|                                     | Methadone          | Buprenorphine     | Clonidine         | Ibogaine  |
| <b>Counselors</b>                   |                    |                   |                   |           |
| Univariate <i>F</i> values (2, 339) | 31.40 <sup>†</sup> | 7.93 <sup>†</sup> | 9.40 <sup>†</sup> | 2.62      |
| Type of program                     |                    |                   |                   |           |
| Methadone                           | 5.92               | 3.43              | −0.04             | −2.43     |
| Outpatient                          | 2.84               | 3.71              | 2.41              | −1.51     |
| Residential                         | 1.50               | 1.41              | 1.60              | −2.83     |
| Differences by program              | M–O<br>O–R<br>M–R  | M–O<br>M–R        | M–O<br>M–R        | <i>ns</i> |
| <b>Clients</b>                      |                    |                   |                   |           |
| Univariate <i>F</i> values (2, 945) | 95.17 <sup>†</sup> | 0.79              | 0.45              | 0.32      |
| Type of program                     |                    |                   |                   |           |
| Methadone                           | 6.98               | 3.04              | 0.20              | −0.90     |
| Outpatient                          | 0.69               | 2.57              | 0.63              | −1.25     |
| Residential                         | 1.08               | 3.17              | 0.62              | −1.23     |
| Differences by program              | M–O<br>M–R         | <i>ns</i>         | <i>ns</i>         | <i>ns</i> |

Note. M, methadone; R, residential; O, outpatient; *ns*, not significant.<sup>†</sup> Significant at  $p < .0001$ .

( $M = -2.9$ ) than those not in recovery ( $M = -1.6$ ); this difference was the primary influence on the multivariate effect for recovery status.

### 3.2.2. Client attitudes

Client attitudes differed by program type ( $\lambda = .811$ ;  $df = 8$ , 1874;  $F = 25.89$ ;  $p < .0001$ ), gender ( $\lambda = .980$ ;  $df = 4$ , 937;  $F = 4.50$ ;  $p < .0013$ ), and education ( $\lambda = .971$ ;  $df = 8$ , 1874;  $F = 3.46$ ;  $p < .0006$ ). Methadone clients ( $M = 7.0$ ) had significantly more positive attitudes toward the use of methadone than outpatient clients ( $M = 0.7$ ) or residential clients ( $M = 1.1$ ; see Table 2). For medications other than methadone (buprenorphine, clonidine, and ibogaine), significant program differences were not observed. Education level affected attitudes toward buprenorphine (clients with college degrees had more positive attitudes) and clonidine (clients with college degrees had more negative attitudes). Women ( $M = -1.1$ ) had less negative attitudes toward the use of ibogaine than men ( $M = -2.6$ ). The variable opiates as the primary drug of choice was not significant in this analysis.

### 3.3. Social norms related to the use of medication

#### 3.3.1. Social norms of counselors

Table 3 presents the means for perceived social norms. The MANOVA for perceived social norms found a significant multivariate effect for program type ( $\lambda = .756$ ;  $df = 8$ , 674;  $F = 12.61$ ;  $p < .0001$ ) and a weak recovery effect ( $\lambda = .97$ ;  $df = 4$ , 337;  $F = 2.69$ ;  $p < .03$ ). Counselors in methadone programs indicated that important people in

their lives supported the use of methadone in the treatment of clients ( $M = 1.5$ ). This contrasted significantly with neutral social norms found among counselors in outpatient ( $M = 0.2$ ) and residential ( $M = -0.3$ ) programs regarding the use of methadone. Social norms related to the use of buprenorphine were relatively neutral. Residential counselors reported a significantly negative social expectation ( $M = -0.8$ ) compared with outpatient counselors ( $M = 0.1$ ). Methadone counselors ( $M = -1.2$ ) had the most negative normative expectations related to clonidine and differed significantly from outpatient counselors ( $M = -0.2$ ) but not residential counselors ( $M = -0.8$ ). All three groups of counselors perceived negative social expectations for ibogaine. Counselors in recovery perceived less social support for the use of ibogaine ( $M = -2.9$ ) than counselors not in recovery ( $M = -1.6$ ).

#### 3.3.2. Social norms of clients

Clients in methadone, outpatient, and residential services differed significantly in perceived social norms for the use of methadone ( $\lambda = .696$ ;  $df = 8$ , 1922;  $F = 47.70$ ;  $p < .0001$ ). Table 3 presents these means. Patients in methadone programs had stronger perceived social norms than outpatient or residential clients. Further, a significant multivariate effect was found for gender ( $\lambda = .984$ ;  $df = 4$ , 961;  $F = 3.99$ ;  $p < .0032$ ); men had significantly more negative attitudes for clonidine (men,  $-1.54$ ; women,  $-1.21$ ) and ibogaine (men,  $-1.71$ ; women,  $-1.25$ ). Methadone clients reported strong positive social expectations toward the use of methadone ( $M = 2.4$ ) and differed from their counterparts in residential ( $M = -0.6$ ) and outpatient ( $M = -0.6$ )

Table 3

Perceived social norms of counselors and clients toward four medications, by program modality

| Variables                           | Medication          |               |           |            |
|-------------------------------------|---------------------|---------------|-----------|------------|
|                                     | Methadone           | Buprenorphine | Clonidine | Ibogaine   |
| <b>Counselors</b>                   |                     |               |           |            |
| Univariate <i>F</i> values (2, 340) | 22.05 <sup>†</sup>  | 4.81*         | 7.75*     | 7.99*      |
| Type of program                     |                     |               |           |            |
| Methadone                           | 1.48                | −0.21         | −1.72     | −2.00      |
| Outpatient                          | 0.16                | 0.11          | −0.24     | −1.24      |
| Residential                         | −0.28               | −0.77         | −0.76     | −1.85      |
| Differences by program              | M–O<br>O–R          | O–R           | M–O       | M–O<br>O–R |
| <b>Clients</b>                      |                     |               |           |            |
| Univariate <i>F</i> values (2, 970) | 155.32 <sup>†</sup> | 3.58          | 2.90      | 2.17       |
| Type of program                     |                     |               |           |            |
| Methadone                           | 2.37                | 0.17          | −1.23     | −1.07      |
| Outpatient                          | −0.55               | −0.37         | −0.94     | −1.42      |
| Residential                         | −0.56               | −0.18         | −0.83     | −1.21      |
| Differences by program              | M–O<br>M–R          | <i>ns</i>     | <i>ns</i> | <i>ns</i>  |

Note. M, methadone; R, residential; O, outpatient; *ns*, not significant.\* Significant at  $p < .01$ .<sup>†</sup> Significant at  $p < .0001$ .

Table 4  
Behavioral intentions of counselors and clients toward four medications, by program modality

| Variables                           | Medication          |                    |                    |                   |
|-------------------------------------|---------------------|--------------------|--------------------|-------------------|
|                                     | Methadone           | Buprenorphine      | Clonidine          | Ibogaine          |
| <b>Counselors</b>                   |                     |                    |                    |                   |
| Univariate <i>F</i> values (2, 344) | 114.16 <sup>†</sup> | 18.79 <sup>†</sup> | 15.19 <sup>†</sup> | 6.84 <sup>†</sup> |
| Type of program                     |                     |                    |                    |                   |
| Methadone                           | 2.36                | −0.26              | −1.74              | −2.06             |
| Outpatient                          | 0.03                | 0.48               | −0.52              | −1.52             |
| Residential                         | −0.99               | −1.16              | −1.45              | −2.19             |
| Differences by program              | M–O<br>O–R<br>M–R   | M–O<br>O–R<br>M–R  | M–O<br>R–O         | R–O               |
| <b>Clients</b>                      |                     |                    |                    |                   |
| Univariate <i>F</i> values (2, 970) | 243.96 <sup>†</sup> | 1.44               | 2.37               | 1.45              |
| Type of program                     |                     |                    |                    |                   |
| Methadone                           | 2.76                | −0.73              | −1.46              | −1.46             |
| Outpatient                          | −0.76               | −0.24              | −1.33              | −1.75             |
| Residential                         | −0.73               | −0.23              | −1.11              | −1.57             |
| Differences by program              | M–O<br>M–R          | <i>ns</i>          | M–R                | <i>ns</i>         |

Note. M, methadone; R, residential; O, outpatient; *ns*, not significant.

<sup>†</sup> Significant at  $p < .0001$ .

services. Methadone clients also had significantly more negative social expectations toward the use of clonidine ( $M = -1.2$ ) than residential ( $M = -0.2$ ) and outpatient ( $M = -0.6$ ) clients. There was also a significant multivariate effect for primary opiate clients ( $\lambda = .987$ ;  $df = 4, 961$ ;  $F = 3.25$ ;  $p < .0117$ ). Significant univariate effects suggested that clients whose primary drug was heroin or other opiates had more negative assessments of clonidine and ibogaine (primary users =  $-1.3$  clonidine,  $-1.38$  ibogaine; non-primary users =  $-0.74$  clonidine,  $-1.09$  ibogaine).

### 3.4. Intentions to use medications

#### 3.4.1. Counselor intentions

Table 4 presents the means for behavioral intentions to use each medication. Significant multivariate effects were observed for program type ( $\lambda = .46$ ;  $df = 8, 682$ ;  $F = 40.08$ ;  $p < .0001$ ), education ( $\lambda = .92$ ;  $df = 8, 682$ ;  $F = 3.44$ ;  $p < .0007$ ), and recovery status of counselors ( $\lambda = .97$ ;  $df = 4, 341$ ;  $F = 2.86$ ;  $p < .02$ ). Methadone counselors had more positive intentions to use methadone ( $M = 2.4$ ) to treat heroin dependence compared with outpatient ( $M = 0.3$ ) or residential counselors ( $M = -1.0$ ). Intentions to use buprenorphine were relatively neutral among outpatient ( $M = 0.5$ ) and methadone ( $M = -0.3$ ) counselors and strongly negative among counselors in residential ( $M = -1.2$ ) treatment. Use of clonidine showed significant differences between outpatient programs and their counterparts in methadone and residential programs. Intentions to use clonidine were neutral among outpatient counselors ( $M = -0.5$ ) and negative for residential ( $M = -1.5$ ) and

methadone counselors ( $M = -1.7$ ). A similar but more negative pattern was observed for ibogaine. Multivariate effects for education and recovery status resulted in differences in intentions to use ibogaine. More educated counselors had lower intentions to use ibogaine than did those with less education. Counselors in recovery ( $M = -2.2$ ) were less likely to report intentions to use ibogaine in treatment plans than those not in recovery ( $M = -1.7$ ).

#### 3.4.2. Client intentions

A MANOVA for behavioral intentions showed a significant multivariate effect for program type ( $\lambda = .61$ ;  $df = 8, 1922$ ;  $F = 66.25$ ;  $p < .0001$ ). Program modality affected intentions to use both methadone and clonidine. Clients in methadone treatment reported positive intentions toward the use of methadone ( $M = 2.8$ ), whereas outpatient ( $M = -0.8$ ) and residential ( $M = -0.7$ ) clients held negative intentions (see Table 4). Methadone clients were significantly more negative ( $M = -1.5$ ) than outpatient ( $M = -1.3$ ) and residential ( $M = -1.1$ ) clients in their intention to use clonidine. Clients in all three levels of care expressed negative intentions to use ibogaine and were ambivalent toward the use of buprenorphine. There were no significant program modality differences for these two medications. No significant effects were observed for gender or education. There was, however, a significant multivariate effect for primary opiate clients ( $\lambda = .999$ ;  $df = 4, 961$ ;  $F = 2.75$ ;  $p < .0271$ ). Clients who used heroin or opiates as their primary drug of choice were less likely to choose to use clonidine as a part of their care (those whose primary drug of use is opiate,  $-1.5$ ; those who do not use opiate,  $-1.1$ ).

### 3.5. Theory of reasoned action

Regression models assessed the relative influence of attitudes and social norms on intention to use each medication. The models were significant for the prediction of intentions to use medications for both clients and counselors. The percentage of variance explained ranged from 40% (counselor intention to use clonidine) to 71% (client intention to use methadone). Table 5 summarizes the regression analyses for counselors and clients.

Both attitudes and social norms had a significant influence on intention to use specific medications, and perceived social norms were the stronger influence in most cases. The use of medications to treat heroin dependence appears to be heavily influenced by both social expectations and attitudes toward using the medications.

For counselors, treatment modality influenced whether attitude or social norms had a greater impact on intention to use methadone. Subgroup analyses suggested that social norms were the dominant influence for methadone counselors ( $\beta$  for attitudes = .24;  $\beta$  for social norms = .45), whereas attitudes were more influential among outpatient counselors ( $\beta$  for attitudes = .48;  $\beta$  for social norms = .30). Attitudes and social norms had relatively equal influence on

Table 5

Parameters from the regressions testing the theory of reasoned action for each opiate treatment medication

|                                                 | <i>b</i> * | <i>SE</i> | <i>t</i> | <i>B</i> |
|-------------------------------------------------|------------|-----------|----------|----------|
| <b>Counselors</b>                               |            |           |          |          |
| Methadone, $F(2, 365) = 180.30, R^2 = .50$      |            |           |          |          |
| Attitude                                        | .213       | .020      | 10.90    | .46      |
| Social norms                                    | .363       | .043      | 8.49     | .36      |
| Buprenorphine, $F(2, 359) = 150.20, R^2 = .46$  |            |           |          |          |
| Attitude                                        | .150       | .019      | 7.90     | .34      |
| Social norms                                    | .47        | .043      | 10.87    | .46      |
| Clonidine, $F(2, 361) = 121.97, R^2 = .40$      |            |           |          |          |
| Attitude                                        | .114       | .019      | 5.90     | .27      |
| Social norms                                    | .473       | .047      | 10.10    | .46      |
| Ibogaine, $F(2, 355) = 181.46, R^2 = .51$       |            |           |          |          |
| Attitude                                        | .067       | .015      | 4.57     | .20      |
| Social norms                                    | .542       | .040      | 13.68    | .59      |
| <b>Clients</b>                                  |            |           |          |          |
| Methadone, $F(2, 1054) = 1,269.94, R^2 = .50$   |            |           |          |          |
| Attitude                                        | .081       | .009      | 9.11     | .19      |
| Social norms                                    | .736       | .022      | 33.57    | .71      |
| Buprenorphine, $F(2, 1007) = 765.69, R^2 = .60$ |            |           |          |          |
| Attitude                                        | .067       | .009      | 7.39     | .17      |
| Social norms                                    | .711       | .024      | 29.51    | .68      |
| Clonidine, $F(2, 1028) = 852.73, R^2 = .62$     |            |           |          |          |
| Attitude                                        | .060       | .007      | 7.96     | .17      |
| Social norms                                    | .699       | .021      | 33.41    | .70      |
| Ibogaine, $F(2, 1003) = 892.02, R^2 = .64$      |            |           |          |          |
| Attitude                                        | .060       | .007      | 8.13     | .18      |
| Social norms                                    | .719       | .023      | 31.90    | .70      |

Notes. *b*, Unstandardized regression weight; *SE*, standard error; *t*, *t* value; *B*, standardized regression coefficient. All regression coefficients are significant at  $p < .0001$ .

intentions to use methadone among residential counselors ( $\beta$  for attitudes = .34;  $\beta$  for social norms = .36).

#### 4. Discussion

Increased availability of medications for treatment of alcohol and drug disorders suggests that more attention must be directed toward cognitive influences on the use of medications among counselors and clients. The analysis of client and counselor attitudes, social norms, and intentions to use medications for the treatment of opiate dependence finds substantial variation by treatment setting. Clients and counselors in residential and outpatient settings had more neutral or slightly negative assessments of methadone. Surprisingly, residential programs, although historically opposed to the use of medications, were only slightly negative in their evaluation of methadone. The relatively neutral rating suggests that a broadened view may be emerging toward the use of methadone.

Across treatment settings, client and counselor attitudes, intentions, and perceived social norms toward the use of buprenorphine tended to be neutral or slightly negative. The most consistent support for buprenorphine was found in the positive attitudes from clients and counselors in outpatient treatment programs. Overall, clients seemed to be less

informed, or had less experience with, and knowledge of, buprenorphine (standard deviations were more variable). Because buprenorphine is a partial agonist with a ceiling effect on receptor activation, it has a greater margin of safety in dosing and the potential to be used in treatment programs across the United States. As the “gatekeepers” of clinical information and referrals, the attitudes and intentions of substance abuse counselors may affect the use of new medications. Findings from this study suggest that there may be significant opportunity to strengthen support for the use of buprenorphine through effective educational efforts.

Client and counselor assessments of clonidine were consistently negative. Clonidine is widely used to suppress opiate withdrawal symptoms during detoxification protocols, but it is also perceived as relatively ineffective. In this study, the most negative perceptions of clonidine came from counselors and clients in methadone programs. According to Ling et al. (2005), opiate-dependent patients reported lower cravings and had significantly better treatment completion rates when using buprenorphine during detoxification as compared with those using clonidine. In addition, Kovas et al. (in press) also reported better treatment engagement among patients seeking heroin detoxification who used buprenorphine as compared with the cohort of patients who received clonidine. Discharge evaluations from this study also confirmed better cooperation in treatment and aftercare planning for the buprenorphine cohort (Kovas et al., in press). Our study found that clients whose primary drug of use is opiate were less likely to report intentions to use clonidine. This is consistent with the current literature regarding the dissatisfaction with clonidine and poor patient compliance with clonidine detoxification protocols.

Tests of the theory of reasoned action documented its applicability to the assessment of attitudes toward the use of medications to treat opioid dependence. The simple model accounted for 40% to 70% of the variation in intentions to use specific medications. The model suggests that efforts to promote the use of medications for the treatment of opioid dependence need to incorporate a strong social normative component. Perceived social norms were a consistent determinant of intention to use the medications.

The findings from this study suggest that attitudes and social norms are influential for both clients and counselors as they consider treatment options in their personal recovery and assist others in addressing opioid dependence. Another important finding is the strength of the social normative influence in determining both counselor and client intentions to use medications. Overall, social expectations were the strongest influence across settings and medications. Thus, it appears that social interaction is the most significant communication channel for those considering the use of medications in their treatment. This finding is important in terms of developing initiatives to promote the use of medications for treatment of opioid dependence and suggests that we must address social expectations (normative influences) as well as attitudes and beliefs. This finding



corresponds with Rogers' (1995) assertion that members of the social system are an important element in the diffusion process. In substance abuse treatment, the social system includes consumers, practitioners, and the community at large (Substance Abuse and Mental Health Services Administration, 1999). If the social norms do not change, it will be difficult to foster greater use of medications to treat drug dependence. Thus, efforts to promote the use of medications should include a focus on the social environment.

Client and counselor attitudes and beliefs about medications may be amenable to change with well-developed interventions and are likely to influence adoption and use. More specifically, counselors may influence client use of medications. Informed by the therapeutic alliance and potential referrals, clients are likely to form opinions or ask questions about medications in the context of individual and group treatment. Most adoption decisions depend on the transfer of subjective information regarding the treatment from one member of a group who has already tried the innovation to another person within that group (Rogers, 1995). Further, the adoption of pharmacotherapies within drug abuse treatment may be particularly sensitive to the characteristics of the medication (compatibility, complexity, and observability), the use of people in recovery as change agents, analyses of the persuasion process, and the social and organizational systems found in drug treatment programs (Thomas & McCarty, 2004; Thomas, Wallack, Lee, McCarty, & Swift, 2003). Therefore, subsequent studies should develop and directly test interventions to modify attitudes and social norms and monitor impacts on intention and, ultimately, the use of medications.

## Acknowledgments

An award (R01 DA 14688) from the National Institute on Drug Abuse supported the collection and analysis of the data. Joy Camp, Ph.D., conducted the focus groups. Jane Moore assisted with data collection.

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